



GOATS AND PASTORAL FARMING

MEAT & WOOL

NEW ZEALAND

June 2005

MOHAIR

Introduction

The Angora is a specific breed of goat which produces the fibre 'mohair'. Mohair is a luxury fibre used extensively in high fashion, both in men's and women's garments and in furnishings.

The United States, South Africa and Turkey have dominated world mohair production. However, the slump in prices during the late 1980s and early 1990s as mohair went out of fashion has dropped levels of production drastically. US production fell to low levels with the removal of mohair price support in 1995. New Zealand was producing about 3% of the world's mohair supply in 1990.

In New Zealand the number of Angoras farmed expanded from 1980 to 1990 as feral Angoras let run wild for 50 years were redomesticated and Angora bucks mated to other types of goats, resulting in very variable fibre quality. Importation of Angoras from Australia also occurred and in recent years a number of goats of South African and Texan ancestry were imported. At the peak, New Zealand was producing almost 500 tonnes of low quality mohair. Currently, there are around 800 mohair farmers, producing approximately 80,000 kg/year of a much higher quality.

Mohair is noted for fashion peaks. Increasing demand is triggered by fashion moves to brighter colours and the brushed surface look. Demand in the late 1950s was based on a fashion for mohair skirts and in the late 1970s-early 1980s was triggered by a fashion for mohair knitwear reinforced by demand for mohair suits.

Description

Mohair is a relatively long, lustrous fibre with mean fibre diameter of 19 to 45 microns. The major feature of mohair is its high lustre, which enables products that are made from it to be dyed to more vibrant colours.

Although fibre diameter is the major factor conferring a soft handle to fibres and fabrics, mohair tends to have a soft handle relative to its fineness. The handle is slightly different from that of fine wool in that it tends to be smooth and silky.

Mohair has low grease content and a yield of 90% is normal in New Zealand Angoras. Imported genotypes generally have a higher grease content and lower yield of around 85%.

White is the only acceptable colour, although there are rare coloured flocks of Angoras producing mohair for the home spinners trade.

Mohair is down graded by the presence of medullated or kemp fibres. Kemps are dull, white chalky fibres, which are coarse and brittle.

Medullated fibres have a hollow core which does not take up dye in the same manner as non-medullated fibres, and also cause problems during processing because of fibre breakage. They also have an effect on handle, stiffness and prickliness of the finished fabric.

Fibre returns

New Zealand Mohair fibre is classified according to desired characteristics which include length (A >90mm; B <90mm), fineness (superfine kid SKF <26 microns; kid K 26-30 microns; young goat YG 30-34 microns; adult H >34 microns) and kemp level (0 kemp free; 1 <2%; 2 2-4%; crossbred >4%). Fleeces lacking in lustre are classed into crossbred fibre, and coloured fibre. Stains also downgrade the fibre.

Top grade mohair is generally obtained by shearing kids at about 6 and 12 months of age when fibre diameter is finest. However the classification 'kid mohair' is somewhat misleading, as it refers to the fibre diameter class rather than the age of animal producing the fibre.

Average fibre returns are shown in Figure 1. Although returns for first grade fibre peaked at \$28/kg in 1987, current returns are \$13-14/kg with demand increasing. World stocks of mohair are low and future prospects are positive. Table 1 shows countries that New Zealand has exported mohair to in the years ending June 2002 – 2004. The balance of mohair produced that is not exported is processed within New Zealand and much of this is processed product is exported.



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Figure 1: Mohair returns (\$/kg)

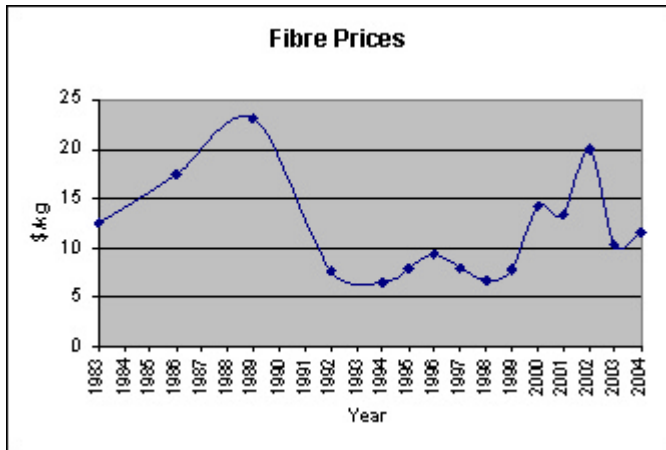


Table 1: Mohair Exports (tonnes)

June year	2001-02	2002-03	2003-04	\$/kg 03-04
Belgium	14.6	32.8	19.3	10.77
UK	5.6	24.5	14.5	16.47
India	10.3	9.7	11.1	5.93
Total	30.5	67.1	44.8	11.53

Harvesting

Angora goats are shorn twice a year, in autumn and spring, at about 6 monthly intervals to produce fibre of 100-175mm in length.

As goats have lower body fat levels compared to sheep, extra feed and protection against adverse weather is essential for at least 6 weeks post-shearing.

Production Levels

As with other fibres, fleece production and characteristics are influenced by age. Fibre growth rate increases to a maximum at 3 to 4 years of age after which it declines. Fibre diameter increases by 8 to 11 microns from 6 months through to 3-4 years of age.

Production from New Zealand goats is lower than that of American and South African angoras and kemp is more frequent, but fibre diameter tends to be finer. Production figures in table 2 indicate the

range that can be expected from goats run in commercial flocks.

Table 2: Comparative Production from Angoras of New Zealand or South African origin

Fibre Characteristic	New Zealand		South African	
	Hogget	Doe	Hogget	Doe
Fleece weight (kg/yr)	1.5-2.5	3-5	2-3	4-5
Fibre diameter (microns)	27-30	30-40	28-30	35-45
Medullation (%)	<1%	<1%	<1%	<1%
Kemp (%)	<0.5%	<0.5%	<0.5%	<0.5%

The impact of the exotic genes in improving fibre quality is most clearly seen in the quality of fibre being classed. Whereas a few years ago a third of the clip was classified into inferior lines, today only 5% falls into these categories. Currently 70% of the clip goes into the nil kemp lines.

Breeding Programme

Every breeding programme must start with a set of objectives and these are generally based on economic considerations. Improvements in production can be derived from improved fibre returns, increased number or weight of surplus animals for sale, or by reducing input costs such as reducing drench requirements. Selection objectives for Angora goats include increased fleece weight, finer fibre diameter, freedom from kemp, satisfactory lustre, more kids reared, faster growth rates, resistance to internal parasites and footrot.

Volatility of prices makes relative emphasis on selection traits difficult to determine. When there is little price differential between fine and coarse fibre there is no incentive to produce finer mohair as the coarser, heavier fleeced Angoras are more profitable. However for most fibre markets finer fibre usually attracts a premium on a long-term basis and if there is surplus in supply then the better quality finer fibre should be more saleable.



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The size of the heritability estimates (Table 3) for live weight, fleece weight and fibre diameter indicate that these traits would all respond to mass selection. Although heritability estimates for medullation and kemp are low, these characteristics are expected to respond to selection as the coefficient of variation is high at 30-60%. Genetic correlations indicate that selection for increased fleece weight is also expected to result in an increase in staple length and fibre diameter.

Table 3 :Range of estimates of heritability and genetic correlations for liveweight and fleece traits in Angora goats

	Live weight	Greasy fleece weight	Fibre Diameter	Staple length	Medullation	Kemp %
Live weight	0.13-0.57	0.10-0.54	0.13-0.48	-0.16-0.28	-0.04-0.12	-0.01-0.29
Greasy fleece weight		0.13-0.50	0.14-0.98	-0.24-0.40	-0.12-0.24	-0.01-0.49
Fibre Diameter			0.12-0.51	-0.03-0.28	0.18-0.37	-0.02-0.29
Staple length				0.12-0.79	-0.07-0.10	0.05-0.21
Medullation					0.16	0.07
Kemp %						0.02

* Heritabilities are indicated in bold

** Genetic correlations

With the exception of fleece weight, which is the easiest trait for the farmer to measure, measurements of fleece characteristics are usually made from samples taken from the midside position of the fleece. Fleece characteristics that can be measured objectively by standard techniques are yield, fibre diameter and its variability, kemp and medullated fibre content. Unfortunately, two of the speciality characteristics of mohair, lustre and softness, cannot be objectively measured at present.

However fibre testing is still relatively expensive and commercial farmers fleeces classes to give a guideline on micron.

Crossbreeding currently undertaken is generally using bucks from South African or Texan origin to

improve New Zealand Angora flocks. After initial use of an exotic buck, future matings can continue using further exotic genetics or selection can be carried out within the crossbred to maintain the desired characteristics from both parent genotypes, such as heavier live weight and greater fleece weights from the South African but retaining finer fibre diameter from the New Zealand Angoras.

References

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